IMPERIAL
DEPARTMENT OF AGRICULTURE
FOR THE WEST INDIES.

REPORT

ON THE

BOTANIC AND EXPERIMENT STATION, TORTOLA, VIRGIN ISLANDS.

1913-14.

BARBADOS:
ISSUED BY THE IMPERIAL COMMISSIONER OF AGRICULTURE
FOR THE WEST INDIES.

1914.

[Price Threepence.]

REPORTS

ON THE

BOTANIC STATION, ECONOMIC PLOTS AND AGRICULTURAL EDUCATION, TORTOLA,—VIRGIN ISLANDS.

Annual Reports on Certain Economic Experiments conducted in connexion with the Botanic Station, 1900-2.

Annual Reports on the Botanic Station for the years 1901 and 1902.

Annual Reports on the Botanic Station, Economic Experiments and Agricultural Education for the years 1902-13.

SUGAR-CANE EXPERIMENTS.

IN BARBADOS.

Report of the Agricultural Work for 1900 :—
Manurial Experiments and Experiments with Varieties of Sugar-cane.

Report of the Agricultural Work for the seasons 1899-1901 to 1908-10.
Parts I and II ; Manurial Experiments. Part III ; Varieties of Sugar-cane.

IN THE LEEWARD ISLANDS.

Report on Experiments conducted with Sugar-canes in the season 1899-1900.

Reports on Experiments conducted with Sugar-canes in the seasons 1900-1 to 1909-10.

Part I ; Varieties of Sugar-cane. Part II ; Manurial Experiments.

Sugar-cane Experiments in the Leeward Islands, 1911-12 and 1912-13.

Parts I and II published together in Royal 8vo.

The plates illustrating the Report on the Agricultural Department, Dominica, 1913-1914, were received too late to be inserted in that Report. They are now forwarded and can be bound in the above named report in the ordinary way.

Tephrosia purpurea, FOR GREEN DRESSING.

COMMON LIME BUDDED ON SOUR ORANGE STOCK.

GRAPE FRUIT BUDDED ON SOUR ORANGE STOCK.

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AVENUE OF *Raphia vinifera* IN BOTANIC GARDEN.

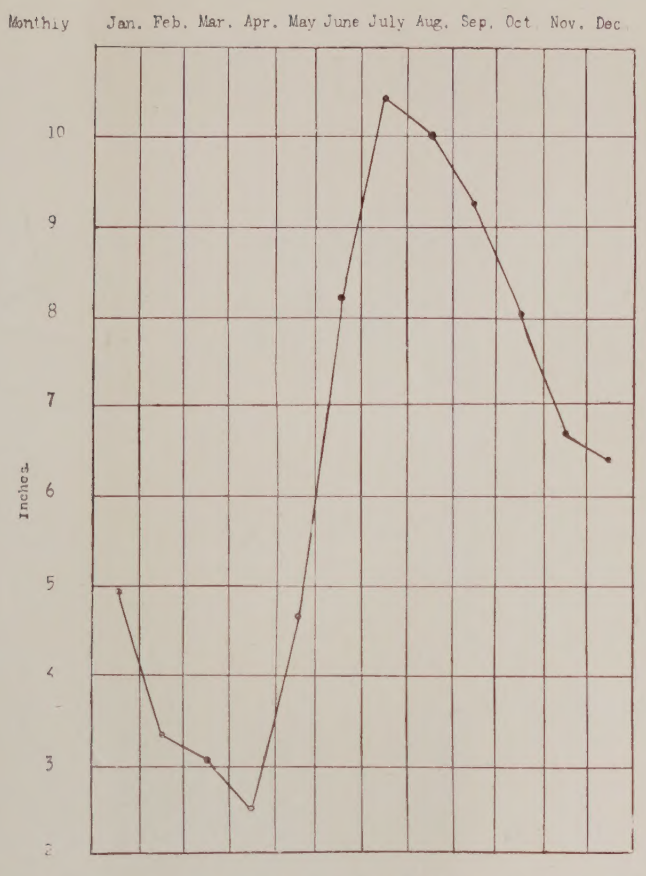

Diagram showing mean monthly rainfall, Botanic Gardens, Dominica, for 21 years, 1893-1913.

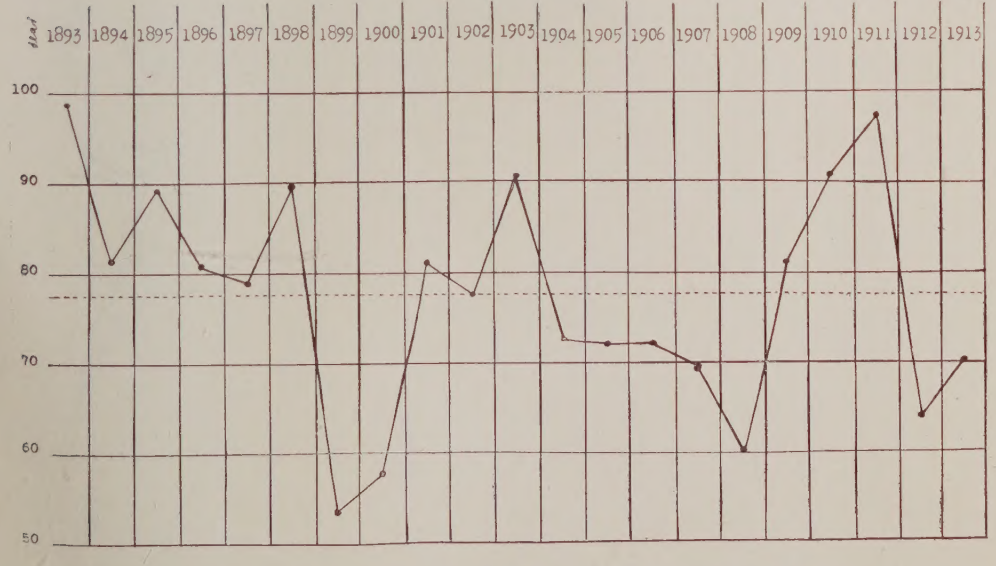

Diagram showing average annual rainfall in the Botanic Gardens, Dominica, for 21 years, 1893-1913.

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LETTER OF TRANSMITTAL.

Commissioner of Agriculture—to Commissioner, Virgin Islands.

No. V.I. 3,031. Barbados,

November 6, 1914.

Sir,

I have the honour to forward, herewith, the Report on the Experiment Station for the Virgin Islands for the year ended March 31, 1914.

2. Permanent work in the Gardens has done much to improve their appearance.

3. The work done in the nursery, and in the distribution of plants therefrom, shows a marked growth on preceding years. Orders have been received and filled for a number of coco-nuts, coffee plants, bay plants, and onions, which is gratifying proof of the usefulness of the Station in fostering new agricultural industries.

4. The plot experiments concerning the crops most generally grown in the Presidency continue to be conducted with care, and the results obtained must be of benefit to the growers.

5. The work done in connexion with the buying of cotton, and dealing with the lint and seed, continues to be an important part of the duties of the Curator, and tends to the advancement of the industry.

6. Owing to unfavourable weather conditions the cotton crop of the Presidency fell below that of the previous year, for although a somewhat larger area was under cultivation, the actual weight of lint shipped was less.

7. Much interest attaches to the demonstration plots now established in connexion with coco-nuts; the progress of these will be carefully watched by all having land in the Virgin Islands on which this cultivation may be carried on.

8. Referring to the list of exports given towards the end of the Report, it is gratifying to note that there has been a marked increase in the value of lime juice exported, and more than a doubling in the value of the exports of fresh fruits and vegetables.

9. In conclusion, it may very fairly be stated that the Department has done, and continues to do very useful work in the agricultural interests of the Virgin Islands.

I have etc.,

(Sgd.) FRANCIS WATTS,

Commissioner of Agriculture
for the West Indies.

CONTENTS.

PAGE.

Work in the Gardens and Observations on Plants 1

Work in the Nursery and Distribution of Plants . . 1

Plant distribution—Seed and Plant Exchanges

Plot Experiments 3

Lime Plots—Cacao—Coffee—The Orchard Plot—Pine-apples—The Coco-nut Demonstration Plots—Lime Plots—Sugar cane—Cotton—Cassava—Sweet Potatoes—Onions and Starches—Tannias—Yams

Notes on Economic Plants 12

Coco nut Industry—Papaw and Bay Trees

Special Investigations 13

Cotton Selection

Progress of the Chief Industries 18

Cotton—Limes—Sugar

Instruction in Agricultural Matters 22

Extension of Interest on Agricultural Matters—Canadian National Exhibition—Berkshire and Tamworth Boars

Details of Administration 23

Expenditure—Receipts from Sales of Plants, etc.—Staff—Repairs to Buildings - Correspondence—Official Visits to the Station—Meteorological Returns

REPORT OF THE EXPERIMENT STATION, TORTOLA.

For the Year ended March 31. 1914.

Work in Gardens and Observations on Plants.

The work of improving the general appearance of the Experiment Station was attempted during the year, and to this end the trimming and felling of trees in the Garden, has done much to open up this part of the Station.

The existing decorative borders were extended and planted up with the following plants: *Thrinax radiata*, *T. parviflora*, *Kentia* sp., *Thunbergia erecta*, *T. erecta*, var. *Alba*, *Ixora coccinea*, the more brightly coloured foliage plants, Eranthemums, Dracaenas, Acalyphas, Codiaeums, and as a result this portion of the garden was much improved in appearance.

The mason work was continued during the year and concrete edging was formed to the central walk leading from the Curator's quarters to the northern part of the garden. The expenditure incurred in laying down the concrete edging to walks and borders has been thoroughly justified in view of the marked improvement in the appearance of the Station

The hedges in the garden, which consist of *Bambusa spinosa* and *Malpighia glabra*, were kept in good order by constant trimming and promise to be very useful for hedge purposes.

The roses in beds on the lawn have made beautiful appearance throughout the year, having flowered profusely. Trees received attention by way of pruning, and during the dry weather a thick mulch of megass was laid on so as to conserve moisture.

Striking displays were made by the flowering of *Spathodea campanulata*, *Bauhinia purpurea*, *Solanum robustum* *Bougainvillaea glabra*, all of which flowered profusely during the year.

Work in Nursery and Distribution of Plants.

This year has proved a record year in the distribution of plants from the Experiment Station since its inception.

A considerable amount of local interest has been aroused in the planting of coco-nuts, and orders for 4,500 plants were received.

In order to meet this demand, a small plot of land situated near the Curator's quarters was converted into a coco-nut nursery. Selected seed coco-nuts were planted in beds in which trenches had been made about 1 foot deep, the bottom of which was lined with fine megass, care being taken, when planting, that the points of the nuts were slightly raised.

The demand for lime plants continues to increase, and the small lime nursery served a useful purpose in supplying plants to growers throughout the year.

The stock of pot plants, consisting of Crotons, Eranthemums, Panax, Hibiscus, Dracaenas, Acalyphas, Palms and other decorative plants was increased, and became most useful in supplying plants to the decorative borders. There has also been a small demand for these pot plants by the people of Road Town.

Orders have been received for 1,500 plants of the Congo coffee, (*Coffea robusta*). Seeds of this coffee, obtained through the courtesy of Mr. J. Jones, of Dominica, have made excellent germination.

The germination of seeds of Bay plants, (*Pimenta acris*) was successful, and a fair number of plants have been potted which will be planted in the Station for the purpose of propagating this plant more extensively.

A brisk demand for onion plants was experienced. Growers displayed keen interest in the growing of onions this year, and the seed beds in the nursery proved useful in supplying 68,500 onion plants to growers. It was regretted that the supply of plants could not meet the demand.

The following is a list of the plants and seeds distributed during the year :—

Onions	68,000	plants.
Lime	3,210	„
Coco-nuts	745	„
Bananas	100	„
Palms and decorative	100	„
Sweet potato	4,000	cuttings.
	76,155	

In addition to this, 2,500 lb. cotton seed was distributed; the greater bulk of seed was sold at 3c. per lb., while a few pounds were distributed free at the end of the season.

A few packages of vegetable and ornamental seeds were distributed, but the requests for these are very limited.

SEED AND PLANT EXCHANGES.

The following seeds were received during the year :—

Livistonia Hoogendorpii	1 pkt. seed	Imperial Commissioner of Agriculture
Artobotrys ordoratissimus	„	Curator of Botanic Station, Antigua
Carapa guianensis	„	I.C.A.
Canavalia ensiformis	„	Archdeacon Hutson, St. Thomas
Sterculia sp.	„	Trinidad Botanic Station
Barosma serratifolia	„	Imperial Commissioner of Agriculture
Allium Cepa	„	Botanic Station, Antigua
Carica Papaya	„	Botanic Station, Montserrat
Zea mays	„	J. B. Romney, Tortola
Glycine hispida	„	Botanic Station, Antigua
Vigna unguiculata	„	do.
Canavalia sp.	„	do.
Tephrosia purpurea	„	do.
Coffea robusta	„	J. Jones, Curator, Dominica.

In addition to the above, seeds of the various vegetables and decorative plants were received from Peter Henderson & Co., New York.

Grateful acknowledgment and thanks are now tendered to the donors who kindly contributed the above.

Plot Experiments.

As in previous years, experiment plots were again laid out at the Station for further investigation of the various crops suitable to Tortola conditions.

The plots were occupied by cotton, cassava, sweet potato varieties, canes etc., which form the annual experiments, as well as limes, coffee, cacao, coco-nuts, orchard plot of fruit trees which occupy permanent plots, and serve the purpose of demonstrating the modes of cultivation of these crops to the agricultural inhabitants of these islands.

LIME PLOTS.

These consist of about 2 acres of land, situated in a rather exposed locality. Attempts however were made in the past to establish wind-belts, the services of which cannot be too highly estimated.

The lime trees in the plots again suffered from the lack of an adequate supply of soil moisture for the developing of fruits during the bearing season.

Record shows that this is the fourth successive dry season experienced, and the decreased return obtained this year must naturally be expected.

Experiments with mulching trees with pen manure and the application of chemical manures have been conducted on these plots, but nothing in the way of improvements is yet to be noticed.

No serious attacks of scale insects were recorded on lime trees in this plot, but the presence of Yellow Love (*Cuscuta* sp.) caused the death of a few more trees this year.

The returns obtained for the last four years are as follows :—

Year.	Barrels.	Value.
1910-11	78	£ 8 19 6
1911-12	67	8 1 2
1912-13	117	14 1 3
1913-14	82	8 17 2
		11 19 1

CACAO.

The continued dry weather experienced, together with the unsuitable locality in which the plot is situated caused the greater portion of the cacao trees in the plot to die out during year.

From the few trees that now occupy the plot, very indifferent yields were obtained. It may moreover be stated, that there can be no great development of this industry, as the area suitable for cacoa in the Virgin Islands is decidedly limited.

COFFEE (*Coffea liberica*).

This variety is quite a hardy plant. The plot received no special attention during the year other than pruning the trees and cutlassing of the grass around them. The condition of the trees continues to be healthy and vigorous, and fair crops of beans were harvested during year. The opinion may be again expressed that Tortola conditions are quite suitable to produce enough coffee to satisfy local consumption.

THE ORCHARD PLOT.

This plot is occupied by a collection of fruit trees and has served the purpose of demonstrating to some extent the suitability or unsuitability of Tortola soil conditions to the growth of fruit trees.

Of the trees growing on this plot, special mention must be made of the mangoes, all of which maintained healthy and vigorous growth and fruited freely.

The mango tree is decidedly the fruit tree of Tortola, and the bulk of the crop finds a ready market in the neighbouring island of St. Thomas.

During the year a number of mango stocks have been grown, with the view to grafting on the better flavoured varieties during the coming year.

Of the citrus trees grown, *Citrus decumana* flowered and fruited, but very sparsely; other citrus trees made no growth and showed no sign of fruiting. It must therefore be concluded that the ill success obtained with the growing of citrus trees on the plot demonstrates very obviously the unsuitability of Tortola soil and climatic conditions to their requirements.

PINE-APPLES.

The pine-apple plot suffered very markedly during the dry months of July, August and September. The vitality of the plants being thus lowered, attacks of mealy-bug accompanied by that of fungus made their appearance. With the fall of adequate rains in the late months however, fairly vigorous growth was made, and the plants were restored to a state of health.

The crop reaped from this plot, was, on the whole, quite fair, in spite of the fact that only 50 per cent. of the plants fruited.

The variety Black Antigua appears to be fairly well adapted to Tortola conditions, and the quality of pines obtained was of a sweet and delicate flavour.

The growing of pine-apples on a larger scale would be quite worthy of the people's consideration.

THE COCO-NUT DEMONSTRATION PLOTS.

The planting out of coco-nuts on Government lands adjoining the Experiment Station has been for some time suggested by Mr. H. A. Tempany, Superintendent of Agriculture, in his reports on visits made to the Virgin Islands; and during the year under review a 4-acre plot was successfully established.

This plot adjoins the Station proper, on its south boundary, and in addition to its adaptability to coco-nut growing, possesses the advantage from the point of view of demonstration, that it lies on one side of the main road leading from Road Town, through the Experiment Station to the east end of the island.

In December of this year the field, which was heavily wooded, was thoroughly cleared of bush, and all roots removed. Holes were then opened 30 feet apart, and dug 3 feet square and 3 feet deep.

Careful preparation of holes consisted in lining the bottom with a layer of fine megass, and mixing the top 18 inches of soil thoroughly with well rotted manure, which was afterwards put back, thus leaving the holes about 12 inches below the surface of the surrounding field.

Plants were soon after set out from 6-months-old seedlings, all of which stood transplanting quite successfully.

A substantial fence of barbed wire was erected around this plot, and a label to demonstrate the object of the plot was placed in a prominent position.

In order to get some return from the land before the coco-nuts could come into bearing, it is proposed to plant cotton and other crops, as catch crops, and during the year cotton plants were established between the lines of coco-nuts.

It may therefore be stated that an attractive and demonstative plot of coco-nuts has been established, and that the purposes for which it was intended, have been successfully served.

During the time of writing other coco-nut plots are in the course of preparation.

LIME PLOTS.

The planting up of lime plots, suggested by Mr. W. C. Fishlock and recommended by Mr. H. A. Tempany, Superintendent of Agriculture, also entailed the taking in of new lands in the working of the Station proper.

These plots are situated on the south side of the existing lime plots, and now form a continuation of the old lime fields. The planting of approximately 2 acres of this crop was performed during the year, which will be furthered as a favourable opportunity offers.

SUGAR-CANE.

Variety Experiments with plants and ratoons were conducted at the Experiment Station during the year under review.

In the plant cane experiments, eleven of the more prominent Barbados and Demerara seedlings were experimented with.

Varieties were planted at a distance of 4 x 4 feet as against the usual 5 x 5 feet, and the results which accrue from the experiment, in addition to that of cropping, have also demonstrated the profitable planting of canes at a less distance apart.

The following table shows the yield of the different varieties reaped during the season :—

Name of varieties.	Area of plot.	Actual yield of plot.			Rate per acre in tons.	Density of juice degrees Beaumè.
		cwt.	qrs.	lb.		
Sealy Seedling	$\frac{1}{32}$	17	1	1	27·6	10
D. 95	,,	17	0	0	27·0	10½
B. 6450	,,	16	0	1	25·6	10
Blue Ribbon	,,	15	3	1	25·0	9½
B. 208	,,	15	0	0	24·0	10½
B. 109	,,	15	0	0	24·0	10
B. 6388	,,	13	2	1	21·6	10
B. 306	,,	13	1	2	21·0	10½
B. 147	,,	10	1	0	16·4	9½
B. 1753	,,	8	2	0	13·6	9
Bourbon	,,	5	1	0	8·0	9½

The results were, on the whole, quite good, in spite of the fact that weather conditions were by no means favourable for proper growth. Sealy Seedling, well known as a valuable cane, and an old favourite of many of the Windward Islands, headed the list and was closely followed by D. 95 and B. 6450, while Bourbon, the variety most extensively grown, dropped down to the bottom of the list and did not appear able to compete with the seedling varieties.

It is therefore of significance that the introduction of these varieties will prove useful to growers, and it is hoped to establish the better varieties more widely in the future.

When comparing the result obtained from this field with that of previous years, in connexion with the closer distance of planting, it can be said that a difference in favour of closer planting has resulted.

A great many observations have also been made as a result of this experiment.

Canes grew faster and seemed greener and more thrifty than when planted at a greater distance, with the added advantage that the cane soon covered and shaded the ground, preventing the evaporation of moisture, and the development of weeds and grasses. Cultivation therefore became much less expensive.

The yields from the experiment conducted with ratoons have not been as great as might have been expected, and in all probability it was due to the presence of the root disease (*Marasmius sacchari*). The following list will show the yields and positions taken by the varieties, also the average yields for the last three years:—

Name of varieties.	Area of plot.	Actual yield of plot. cwt.	qrs.	Rate per acre in tons.	Average yield for last 3 years, tons per acre.
Sealy Seedling	$\frac{1}{16}$ acre	11	2	9·25	14·25
D. 95	$\frac{1}{16}$ „	15	0	12·0	13·17
B. 6450	$\frac{1}{24}$ „	4	3	5·02	11·37
Blue Ribbon	$\frac{1}{32}$ „	5	2	8·85	11·77
B. 208	$\frac{1}{16}$ „	13	3	8·65	11·00
B. 109	$\frac{1}{48}$ „	11	2	9·25	12·63
B. 6388	$\frac{1}{32}$ „	7	1	11·8	12·95
B. 306	$\frac{1}{16}$ „	3	2	2·80	7·20
B. 147	$\frac{1}{16}$ „	9	0	5·85	6·15
B. 1753	$\frac{1}{32}$ „	3	3½	6·50	12·90
Bourbon	$\frac{1}{24}$ „	2	2	2·75	3·15

The table showing the average yield for the last three years is important, and points that Sealy Seedling and D. 95 are well worth planting in preference to the local varieties, of which Blue Ribbon and Bourbon preponderate.

It is pleasing to state that some of the more careful sugar-cane growers in Tortola have sought for planting material of the above mentioned varieties from the Station.

COTTON.

Experiments to ascertain the best month for planting cotton were conducted with Sea Island strain during the year under review.

The planting periods extended from early in June to late in September, and the following table will show the yields obtained from the different plantings :—

Time of planting.	Area of plot.	Actual yield of plot.	Rate per acre.
Early in June	$\frac{1}{8}$ acre	140 lb.	1,120 lb.
„ „ July	„	44 „	352 „
„ „ August	„	31 „	248 „
„ „ September	„	44 „	352 „
Late in September	„	3 „	24 „

The above figures serve to show very clearly the advantage of planting cotton early in the Virgin Islands, and much attention has been given to ensure that this is done in the future.

The June planted cotton received light rains which ensured a good stand, but early in July a drought set in which continued until October ; the cottons planted within these periods were therefore badly hit.

Cotton stainers (*Dysdercus andreae* and *delauneyi*) made their appearance early in January and increased very rapidly during that month. Stainers were however controlled by collecting and shaking into a mixture of kerosene and water The suspended ball trap also proved useful in trapping this pest.

A field of Sea Island cotton devoted to manurial treatment was under experiment this year. They were laid out in three plots as follows :—

(A) No manure.

(B) Pen manure.

(C) 30 lb. of nitrogen of sulphate of ammonia, 20 lb. potash as sulphate of potash and 60 lb. phosphate as superphosphate.

The yields of these plots are as follows :—

Manure.	Size of plot.	Actual yield.	Yield per acre.
No manure	$\frac{1}{8}$-acre	131 lb.	1,048 lb.
Pen manure	„	139 „	1,112 „
Nitrogen potash and phosphate ..	„	115 „	920 „

A small increase in the yield has been obtained from the pen manure plot, while the application of the chemical manure shows a decrease when compared with the no manure plot.

No definite conclusion can be drawn from this experiment, owing to the irregular weather conditions that prevailed. The experiment will again be repeated next season.

In addition to the Sea Island cotton plots, trial plots of Sakellarides, a cotton of Egyptian origin; Southern Cross, a long staple upland; and Carovonica, were planted.

The results of the yields obtained were as follows:—

Sakellarides	400 lb. seed-cotton per acre.
Southern Cross	350 „ „ „ „ „
Carovonica	120 „ „ „ „ „

The above figures are much below the ordinary return obtained from the Sea Island strain, and it is not thought that any advantage other than that of hybridizing work will accrue from these varieties.

The dropping of the flower buds was particularly noticeable in Sakellarides variety, which can only be accounted for by the changes of climatic conditions.

Insect pests made their appearance early in February, the most prominent of which was cotton stainer, (*Dysdercus andreae*).

Of the three varieties, preference was shown by leaf blister-mite (*Eriophyes gossypii*) in attacking the Sakellarides variety.

CASSAVA.

Trials were again made with cassava varieties, the one under review being the fifth consecutive trial made with twenty-seven varieties.

This plant has been cultivated by the inhabitants of the Virgin Islands for a very long period and enters largely into the diet of the people.

From the grated tuberous roots they obtain meal and bread; the plant also contains a starch which is used as an article of food, as well as for laundry purposes.

The drought experienced during July, August and September decidedly checked growth, from which the plants never recovered, in consequence of which, very low yields were obtained.

The following table gives the results obtained this year, and during the previous years :—

CASSAVA VARIETIES.

Name of variety.	Area of plot in acres.	Actual yield of plot in lb.	1913-14.	1912-13.	1911-12.	1910-11.	1909-10.	Average yield per acre.	Average value per acre for 5 years at 1s. per 100 lb. root.
Montserrat 1	1/20	270	5,400	2,700	8,316	12,839	7,141	7,279	£3 12 9
„ 2	1/40	106	4,240	3,356	7,410	6,903	6,578	5,717	2 17 2
„ 3	1/60	76	4,560	1,080	6,480	13,858	5,928	6,381	3 3 9
„ 4	1/60	98	5,880	972	6,912	9,360	3,315	5,287	2 12 10
„ 5	1/60	92	5,520	648	3,564	1,950	8,320	4,002	2 0 0
„ 6	1/60	32	1,980	3,132	3,564	9,877	7,020	5,115	2 11 2
„ 7	1/60	124	7,440	270	2,862	3,157	3,640	3,475	1 14 9
White Top	1/60	126	7,560	1,188	864	17,316	16,328	8,651	4 6 6
Blancita	1/60	132	7,920	2,952	6,804	14,666	15,756	9,819	4 18 2
Blue Bud White	...	...	...	...	3,986	11,808	13,728	9,839	4 18 5
Black Stick	1/120	55	6,600	810	702	10,088	11,960	6,032	3 0 0
White Greenaway	1/120	50	6,000	2,970	648	11,180	11,804	6,520	3 5 3
Bobby Handsome	1/60	91	5,460	1,836	270	4,368	10,920	4,570	2 5 9
Smallings	1/60	60	3,600	1,998	2,160	17,888	10,608	7,250	3 12 6
Bitter	1/60	28	1,680	216	1,728	7,644	10,088	4,270	2 2 9
French	1/60	70	7,200	4,860	1,512	11,836	9,568	7,250	3 12 6
Silver Stick	1/120	62	7,440	1,998	1,944	10,888	8,944	6,084	3 0 9
Blue Bud Black	1/60	30	1,800	1,404	270	3,536	8,580	3,118	1 11 2
Bunch of Keys	1/60	62	3,720	1,404	810	11,752	8,008	5,138	2 11 5
Cotton Tree	1/60	64	3,840	2,376	1,242	9,464	7,592	4,902	2 9 0
Red Greenaway	1/120	36	4,320	372	3,402	3,640	7,072	3,761	1 17 7
New Green	1/60	64	3,840	1,512	1,728	9,776	6 968	4,764	2 7 8
Blue Top	1/60	58	3,480	1,242	3,942	6,604	6,445	4,343	2 3 6
Mullings	1/120	80	9,600	2,916	4,760	12,168	4,420	6,772	3 7 9
Jackroe	1/120	62	7,440	324	2,592	7,748	3,692	4,359	2 3 0
Yellow Belly	1/60	58	3,480	7,236	8,316	3,276	3,224	5,106	2 11 0
Negrita	1/120	17	2,040	1,502	2,160	572	5,460	2,346	1 3 6

SWEET POTATOES.

The sweet potato is decidedly the most important food crop in these islands; the real value of this crop as a food to the inhabitants cannot be over estimated; it enters very largely into the household management of the Virgin Islands peasantry.

Experiments to ascertain the most suitable varieties for cultivation were again conducted with twelve varieties. The results will show the yield obtained this year and during the five previous years :—

Variety.	Area of plot.	Actual yield of plot.	Calculated yield per acre.					Average yield per acre.	Cooking quality.
			1913-14.	1912-13.	1910-11.	1909-10.	1908 9.		
Spooner ...	... $\frac{1}{39}$ acre.	222	8,658	3,460	9,792	4,336	10,980	7,445	White and good.
Bourbon ...	... $\frac{1}{39}$,,	192	7,488	5,644	10,642	4,654	9,630	7,611	White, fair quality.
Caroline Lee	... $\frac{1}{39}$,,	178	6,942	4,280	14,700	7,776	5,526	7,844	Yellow, poor quality.
T. 3 ...	... $\frac{1}{39}$,,	155	6,045	5,580	11,900	5,688	12,040	8,250	Yellow, not good.
Anguilla ...	... $\frac{1}{39}$,,	144	5,616	4,480	8,432	7,033	11,988	7,509	White, dry and good.
Hen and Chickens	$\frac{1}{39}$,,	136	5,304	2,700	3,009	6,372	8,640	5,205	Medium quality.
T. 1 ...	... $\frac{1}{39}$,,	94	3,666	5,920	6,664	324	15,872	6,489	Fair quality, yellow.
Gentleman's Table	$\frac{1}{39}$,,	98	2,842	3,840	1,122	1,386	2,862	2,410	White, dry and good.
Blue Belle	... $\frac{1}{39}$,,	70	2,030	4,720	5,731	11,332	10,816	6,926	Medium quality, yellow.
Elijah ...	... $\frac{1}{39}$,,	66	1,914	5,904	9,503	8,028	6,516	6,373	White, a good potato.
Harper ...	.. $\frac{1}{78}$,,	12	696	5,880	7,463	14,436	4,680	6,631	White, fair quality.
Quildon ...	... $\frac{1}{116}$,,	4	464	1,440	5,900	...	4,680	3,121	Rather waxy, yellow.

The results from most of these varieties were extremely poor, which, in a measure, must be accounted for by the unpropitious weather experienced.

Attacks of the grub *Cryptorhynchus batatae*, commonly known as Scarabee or Jacobs, were noticed during the time of harvesting.

Further trials with this valuable food crop will be continued, and other varieties will be experimented with, when it is hoped that a variety more suitable to local conditions will be found.

The following varieties have been forwarded by Mr. T. Jackson, Curator of the Botanic Station, Antigua :—

White Gilkes, Ship Rock, Annie, Black Vine, Yellow Red, Jackass 2, Bett Weekes, Jim Gage, Montserrat Mama, Vincelona, North 4, Jackass 1, T. 4.

ONIONS.

A considerable amount of local interest was displayed in the purchase of onion seedlings at the Experiment Station during the period under review: 8 lb. of Teneriffe seed was imported and grown at the Station, and 68,000 seedlings were distributed to growers. It is to be regretted that the demand for plants was far in excess of the supply.

Onions do well in the Virgin Islands, and although there is no record of the quantity that was grown during the season, it is known that a fair crop was reaped, which was readily bought up for local consumption.

In order to foster the industry, the Agricultural Department has ordered a large supply of seeds to meet demands for next season.

A $\frac{1}{20}$-acre plot was grown at the Experiment Station, which gave a return of 450 lb. of dried onions. These were shipped to the St. Thomas market, but only realized $3\frac{1}{2}$ c. per lb. The price must be considered a low one, as it is known that onions have been sold at the rate of 10c. per lb. in the past.

The result obtained from the plot is very encouraging, and it is hoped that with a larger supply of planting material next season, the onion industry will occupy a more prominent position as a minor industry in the Presidency.

STARCHES.

The chief starches used by the inhabitants of this island are obtained from tous-les-mois, cassava and arrowroot plants. Arrowroot is used as an article of food, more especially for children and invalids. It is obtained from the white fleshy rhizomes of *Maranta arundinacea.*

A plot of land $\frac{1}{7}$-acre in area, planted since 1901, was reaped during the season. The yield of the plot was 1,297 lb. roots, from which 104 lb. starch was extracted, the yield per acre being 728 lb. of starch.

Tous-les-mois, also used as a starch, is extracted from the fleshy underground stems of *Canna edulis*, a plant closely allied to the Marantas. The starch obtained from this plant differs from the arrowroot starch in that the colour is darker, and the starch granules are much larger.

A $\frac{1}{8}$-acre plot was grown, which yielded 968 lb. of roots, from which 29 lb. starch was extracted. The return per acre would therefore be 232 lb. starch per acre.

TANNIAS (*Colocasia esculenta*).

A small plot of this valuable food crop was grown at the Station, but owing to the dry weather, and the improper manner of cultivation, they did not give any return. They however served the purpose of supplying plants for further experiments. The introduction of other varieties possessing better cropping qualities would be appreciated by small growers.

YAMS (*Dioscorea* sp.).

Eight of the heavier yielding varieties of yams were received at the Station through the courtesy of Mr. Jackson, Curator of the Botanic Station, Antigua, and planted out in nursery beds for supplying material for propagating this crop.

Yams in these islands form an important part in the diet of the people, and the attention now given to the introduction of better varieties must be considered of some importance in improving the local supply.

The varieties now growing at the Station are Lisbon, Bottle Neck Lisbon, Horn, Bugle Horn, Danish, Light Red, and Seal Top.

Notes on Economic Plants.

Coco-nut Industry.

During the period under review the planting of coco-nuts by the Government and proprietors of land in the Virgin Islands received much attention.

The interest displayed in the orders for plants this season must in a great measure be attributed to the example shown by the Experiment Station in planting out a 4-acre demonstration plot of this palm.

In order to meet the demand for plants, selected nuts were obtained locally from a group of trees growing at Cappoons Bay estate, the property of J. B. Romney, Esq. Trees on this estate are quite free from any insect or fungoid pest, very prolific, and producing a nut of over 4 inches in diameter.

In view of these facts, together with the risk that is run in importing disease by the importation of plants, the Department deemed it wise to propagate from local sources.

Up to the time of writing, approximately 35 acres of coco-nuts have been established. Particular attention must be drawn to the establishment of a 20-acre plantation by a recent settler in Tortola. The soil on this plantation is of a sandy loam nature, and should the proper subsequent treatment be given to the plants, it is reasonable to expect that a remunerative yield will be obtained.

Continued interest has been shown in the planting of this crop, and it is estimated that approximately 50 acres will be put into coco-nut cultivation next season.

It is hoped that the interest will be kept up, as there is great scope for the development of a coco-nut industry in the Virgin Islands.

On the suggestion of Mr. H. A. Tempany, the writer has started to compile a register of the area and locality of lands in the Virgin Islands adapted for coco-nut cultivation, which is now receiving so much attention.

Papaya.

A plot of *Carica Papaya*, the plant that produces the papain of commerce, was planted out during the season. The plants have made very disappointing growth, and appear very susceptible to the attacks of a form of root disease the cause of which is as yet undetermined.

The introduction of the papain industry into these islands might reasonably be expected to be a remunerative one, but the lack of labour for collecting the juice appeals to the writer as a possible hindrance.

The collecting of the juice, and the preparation of papain will be carried on as soon as trees come into bearing, when it is proposed to hold a meeting of planters to demonstrate the mode of handling the crop.

Bay Oil Industry.

The Bay tree (*Pimenta acris*) growing at the Experiment Station serves as an excellent object-lesson as to the possibilities of these trees being planted on a large scale in these islands.

This Bay tree referred to, was planted in 1902, and has now attained a height of 20 feet, with well developed laterals. The tree seeded profusely during the summer months, from which many hundred seedlings were potted successfully.

From the stock of plants that are now growing in the nursery a demonstration plot will be established as soon as they are of proper size.

There are many requests for Bay plants by planters in these islands, which will be supplied as soon as plants are available.

Special Investigations.

COTTON SELECTION.

In order to obtain good strains of cotton especially adapted to local conditions of soil and climate, and possessing uniform quality of lint, a system of seed selection in which certain individual plants are selected for their good qualities, has been started at the Experiment Station during the year under review.

The field selection work of individual plants was performed by the Acting Curator, the examination of lint being supervised by the Superintendent of Agriculture of the Leeward Islands.

During the year, nine field selections were made, seven of which were retained for planting purposes; the remainder were rejected on account of the coarseness and short quality of the lint. The following tables will show the result of field and laboratory examinations:—

Cotton Selection, Field Notes.

No. of plant, 1.

Parent of plant, St. Kitts.

Character.	Marks.	Remarks.
Habit	10	Good
Height	9	6 feet
Number of bolls	10	108 bolls
Max. number of bolls per branch ...	10	14 „
Shape of bolls	8	Some irregular
Size of bolls	8	Some small
Distribution of bolls	9	
Resistance to disease { insects	10	
Resistance to disease { fungi	8	Some mildew
Total marks	82	P. F.* $\frac{108}{6} = 18$

No. of plant, 2.

Parent of plant, St. Kitts.

Character.	Marks.	Remarks
Habit	10	Good
Height	10	$4\frac{1}{2}$ feet
Number of bolls	10	Total on tree 98 bolls
Max. number of bolls per branch ...	10	10 „
Shape of bolls	8	
Size of bolls	8	
Distribution of bolls	9	
Resistance to disease { insect	8	Some *Aphis gossypii*
Resistance to disease { fungi	10	
Total marks	83	

*P. F. $\frac{98}{4\frac{1}{2}} = 22$

*P.F. = Productivity Factor, which is the number of bolls on the plant divided by the height of the plant in feet.

No. of plant, 3.

Parent of plant, St. Kitts.

Character.	Marks.	Remarks.
Habit	10	Good
Height	10	4½ feet
Number of bolls	10	Total number 90
Max. number of bolls per branch ...	9	9
Shape of bolls	10	Good
Size of bolls	10	Good
Distribution of bolls	9	
Resistance to disease { insects	10	
Resistance to disease { fungi	10	
Total marks	88	

*P. F. $\frac{90}{4\frac{1}{2}} = 20$

No. of plant, 4.

Parent of plant, St. Kitts.

Character.	Marks.	Remarks.
Habit	10	
Height	10	5 feet
Number of bolls	10	Total on tree 100
Max. number of bolls per branch ..	9	10 bolls
Shape of bolls	9	
Size of bolls	9	
Distribution of bolls	10	
Resistance to disease { insects	10	
Resistance to disease { fungi	10	
Total marks	87	

*P. F. $\frac{100}{5} = 20$

*P.F. – Productivity Factor, which is the number of bolls on the plant divided by the height of the plant in feet

No. of plant, 6.

Parent of plant, St. Kitts.

Character.	Marks.	Remarks.
Habit	9	1 large lateral branch
Height	10	5 feet
Number of bolls	10	100 bolls
Max. number of bolls per branch ...	9	10 ,,
Shape of bolls	9	Medium
Size of bolls	9	,,
Distribution of bolls	9	
Resistance to disease: insects	10	
Resistance to disease: fungi	9	Rust
Total marks	84	

*P. F. $\frac{100}{5} = 20$

No. of plant, 7.

Parent of plant, St. Kitts.

Character.	Marks.	Remarks.
Habit	9	
Height	10	5 feet ... ...
Number of bolls	10	Total number 100
Max. number of bolls per branch ...	9	10 bolls
Shape of bolls	10	Very good
Size of bolls	10	...
Distribution of bolls	9	
Resistance to disease: insects	10	
Resistance to disease: fungi	9	Rust ...
Total marks	86	

*P. F. $\frac{100}{5} = 20$

* P.F. = Productivity Factor, which is the number of bolls on the plant divided by the height of the plant in feet.

COTTON SELECTION.

No. of plant, 9.

Parent of plant, St. Kitts.

Character.	Marks.	Remarks.
Habit	9	1 large lateral
Height	10	4 feet
Number of bolls	9	80 bolls
Max. Number of bolls per branch .	10	10 ,,
Shape of bolls	9	Medium
Size of bolls	9	,,
Resistance to disease { insects	8	Mildew
Resistance to disease { fungi	8	
Total marks	72	

* P. F. $\frac{80}{4} = 20$

COTTON SELECTION, LABORATORY NOTES.

Number of plant.	Length. Max.	Min.	Average.	Marks.	Strength, marks.	Evenness, marks.	Fineness, diameter of fibres.	Fineness, marks.	Lint, per cent.	Total marks.
1	47·8	43·8	46·1	6·1	7·1	7·1	·0152	5·6	27·1	25·9
2	48·0	44·3	46·1	6·1	7·0	7·2	·0143	7·4	25·1	27·7
3	47·5	40·8	44·9	4·9	6·3	7·3	·0144	7·2	28·8	25·7
4	51·8	44·3	48·6	8·6	7·1	6·8	·0144	7·2	25·1	29·7
6	44·8	37·3	41·9	1·9	7·5	7·5	·0153	5·4	31·6	22·3
7	47·0	43·8	45·1	5·1	7·1	7·0	·0142	7·6	27·2	26·8
9	44·5	39·5	41·4	1·4	6·3	6·5	·0122	11·6	30·00	25·8

Since the inception of the Experiment Station, this is the first year that any selection work has been done; it is hoped that this work will be continued in the future, and that the benefit derived in other parts of the cotton world from selection will some day be realized in these islands.

Six strains were therefore planted out in separate individual plots, the seeds of which will be distributed to growers.

Selections should be made each year, thus ensuring a continuity of good types of locally grown seed for distribution.

*P.F. - Productivity Factor, which is the number of bolls on the plant divided by the height of the plant in feet.

Progress in the Chief Industries.

The following table shows the chief industries of the Presidency; they are tabulated according to the value of exports, as follows :—

LIST OF EXPORTS FROM THE VIRGIN ISLANDS—JANUARY 1 TO DECEMBER 31.

Items.	1911.	1912.	1913.
	£ s. d.	£ s. d.	£ s. d.
Cattle	2,783 16 0	2,457 7 0	2,450 0 0
Cotton and seed	3,490 0 0	2,384 14 7	2,461 0 0
Small stock	636 16 0	627 3 7	546 0 0
Fruit and vegetables	572 11 4	302 9 11	631 0 0
Charcoal	407 13 11	393 1 0	380 0 0
Fish (fresh)	358 16 8	528 17 10	330 0 0
Lime juice	158 0 0	131 11 0	195 0 0
Horses	183 0 0	104 0 0	55 0 0
Hardwood	64 12 7	61 19 0	22 0 0
Mules	140 0 0	128 0 0	60 0 0
Fish (dried)	13 6 11	51 16 2	130 0 0
Asses	11 2 0	23 4 0	4 0 0
Salt	10 7 0	22 18 0	13 0 0
Hides and skins	...	3 18 0	1 0 0
Firewood	1 14 0	9 17 6	1 0 0
Straw and bamboo	...	5 19 0	...
Turtle	10 0	4 4 0	...
Woodbark	11 2 0	4 0 0	8 0 0
Coco-nuts	3 12 0	5 3 10	3 0 0
Cacao	1 0 0	...	3 0 0
Total	£8,848 10 5	£7,250 4 5	£7,293 0 0

COTTON.

A very unfavourable season was experienced, with the result that growers had to face great difficulties in establishing their fields.

The small precipitation during the period from June to September retarded the progress of young cotton fields.

This was regretable, as the area planted was somewhat larger than in the previous year.

On the whole, very poor yields were obtained, which in many cases were not adequate to cover the expenditure on the crop.

In conjunction with the unpropitious weather experienced, another factor which must be held responsible for shortening the amount of cotton reaped this season, was the early destruction of cotton-fields, hence very little second crop. This, though decreasing the crop to some extent, was sound policy, as in the first case insect pests, especially *Eriophyes gossypii*, were killed out by starvation; and secondly, early planting to ensure an early crop next season has resulted.

The annual production was therefore much reduced, when compared to the record year of 1909; there was also a decrease of 18 bales, equivalent to 4,000 lb. lint, on the previous year's crop.

One must however be prepared for occasional set-backs in all agricultural operations, and there is every reason to look for a satisfactory increase in 1915.

Up to the time of writing much attention has been displayed in the clearing up and preparation of new fields, and with the advent of favourable weather a good attempt to establish early fields will be ensured.

The most prominent of pests that attacked cotton this season was the leaf-blister mite (*Eriophyes gossypii*). This pest was fairly common on some fields of young cotton, and very much more pronounced on the older trees.

The infection was carried about by old cotton bush which was left in the ground. Many young fields whose growth had been retarded by dry weather caught the infection, and while no accurate estimate of the damage done by this pest can be given, it must be said that the ravages of leaf-blister mite were accountable, to some extent, for the decrease in the annual output of cotton.

Much attention has been paid by the Department to do their utmost to stamp out this pest in the future.

Slight isolated attacks of cotton caterpillar (*Alabama argillacea*) were experienced, which were easily dealt with by the application of Paris green and lime to the trees.

The presence of cotton stainers was observed at the end of the season. Stainers made their appearance in great numbers, and were controlled to some extent, by collecting and killing in kerosene oil and water. The 'Suspended Ball Trap' proved effectual in abating an attack of stainers experienced at the Experiment Station.

Two species of cotton stainers are prevalent in the island: *Dysdercus andreae* and *Dysdercus delauneyi*, of which *D. andreae* preponderates.

Marked attention has been drawn by small growers to the dropping of bolls in cotton fields in the western and northern districts of Tortola. The factor to be held responsible was undoubtedly a change in climatic conditions.

The actual weight of clean lint shipped for the season was 32,317 lb. as against 36,388 lb. for the previous year's crop. The whole crop, classified in four grades for this year and that of last year, is as follows:—

	1912-13.	1913-14.
First grade ...	29,522 lb. or 81·13 per cent.	28,467 lb. or 88·1 per cent.
Second grade ...	1,383 „ „ 3·8 „	
Native cotton ...	4,259 „ „ 11·7 „	3,329 „ „ 10·3 „
Stained ...	1,224 „ „ 3·3 „	521 „ „ 1·6 „
	36,388 lb.	32,317 lb.

The proportions of the different grades of this year's crop, when compared to last year's figures, show an increase in the percentage of first grade cotton; also that the end of the cotton crop was not reached, owing to the policy of the early destruction of cotton-fields pursued this year, the benefit of which must be looked for next season.

The following tables show the weight and value of cotton exported from the Virgin Islands each year since 1904 :—

Year.	Lint shipped.	Value.	Increase or decrease in weight.	Increase or decrease in value.
		£ s. d.		£ s. d.
1904	1,256	35 0 0		
1905	4,000	145 0 0	+ 2,750	+ 110 0 0
1906	7,808	265 0 0	+ 3,807	+ 120 0 0
1907	10,177	620 0 0	+ 2,370	+ 355 0 0
1908	32,520	1,800 0 0	+22,343	+1,180 0 0
1909	52,528	2,500 0 0	+20,928	+ 700 0 0
1910	23,139	1,520 0 0	-29,389	- 980 0 0
1911	50,337	3,180 0 0	+27,198	+1,660 0 0
1912	51,677	3,265 0 0	+ 1,340	+ 85 0 0
1913	36,383	2,446 0 0	-15,289	- 819 0 0
1914	32,317	2,191 0 0	- 4,071	- 255 0 0

The distribution of the amount paid out for raw cotton in round figures is as follows :

	1912-13.	1913-14.	Increase or decrease.
	£ s. d.	£ s. d.	£ s. d.
Tortola, etc.	971 0 0	998 0 0	+ 27 0 0
Virgin Gorda	599 0 0	371 0 0	-228 0 0
Jost van Dykes	179 0 0	209 0 0	+ 30 0 0
Anegada	47 0 0	36 0 0	- 11 0 0
	1,796 0 0	1,614 0 0	-182 0 0

The total weight of seed-cotton received at the cotton factory was 126,272 lb. which yielded after being ginned, 32,317 lb. clean lint. The percentage of lint obtained was therefore 25·6 per cent. The crop was received in 9,800 separate parcels of cotton, all of which had to be weighed and accounted for separately.

LIMES.

The purchase of limes was again carried on by the Agricultural Department, the crushing and concentration of the juice being performed at the Experiment Station. The growth of this industry, although not markedly observed in the past, is now being given some attention by a few of the larger estate proprietors of Tortola, and during the year enquiries for the erecting of lime mills were made.

At present one proprietor has started crushing operations, and there is every reason to believe that the area of lime cultivation will be increased next season.

The quantity of limes purchased for the last six years is given in the following table:—

Year.	Barrels of limes purchased.	Amount paid for limes.	Increase or decrease, barrels.
		£ s. d.	
1908-9	252	36 0 0	...
1909-10	625	72 0 0	+373
1910-11	800	105 0 0	+175
1911-12	730	85 0 0	- 70
1912-13	961	116 0 0	+231
1913-14	680	82 0 0	-281

The crop under review amounted to 101,739 lb., which shows a decrease of 2,390 lb. as compared with the previous year. There are many factors which must be held responsible for this decrease, prominent among which was the very limited rainfall experienced.

Another very important disadvantage to the crop was the great difficulty experienced by some lime planters in transporting their limes from the western and northern parts of the island to the Experiment Station. There can be no doubt that the problem of transporting such a bulky crop as limes from one end of Tortola to another, is one of great difficulty, especially when we are acquainted with the conditions of the roads; and, in the opinion of the writer, much of the lime crop is never received at the Experiment Station. The erecting of crushing mills for handling the crop in other parts of the island may therefore be considered a move that will lead to the advancement of the industry.

Localities in the north-west district of Tortola appeal to the writer as ideal spots for limes from the point of view of their sheltered positions; and with the successful erection of other crushing centres, it is reasonable to expect much progress in the lime industry.

During the dry months of July, August and September the presence of scale insects was much pronounced on lime trees throughout the island. Attacks of the green scale (*Coccus viridis*) and the white scale (*Chionaspis citri*) were experienced in greatest quantities.

SUGAR.

This industry is at present carried on in a very crude manner. The lack of proper equipments for manufacturing sugar is gradually lessening the interest of cane cultivators every year. In addition to the crude and wasteful method of handling the crop, cane growers this year had to face the greatest drawback, dry weather, which naturally, as is the case with all crops, lessened the yield of their fields.

The manufacture of sugar was again carried on at the Station during year, when approximately 120 tons cane were crushed in a Chattanooga mill, and boiled in open tayches.

It is to be regretted that the output of muscovado sugar cannot meet the demand for local consumption, and supplies have to be imported from neighbouring islands.

The condition of Tortola soil, and climatic conditions are admirably adapted to the growth of the sugar-cane, and the sugar industry in the hands of large capitalists would soon play a most important part in the Presidency's annual exports.

The variety most common among growers is the Bourbon, which broke down very markedly this year owing to the attack of root disease (*Marasmius sacchari*).

As regards the seedling canes that are grown at the Station, it is pleasing to note that some interest is manifested by cane growers in making enquiries for plants; preference is being shown for Sealy Seedling and B. 147.

Instruction in Agricultural Matters.

Of the duties pertaining to the Curator, the work of Agricultural Instructor is by far the most important. The Curator is kept quite active all the year round inspecting and advising on matters relating to agriculture. A uniform number of visits is made to each district of Tortola and the out-islands, when advice on the cultivation and care of their crops is given to planters.

A useful part of the Agricultural Instructor's work consists in instructing planters on the means of controlling outbreaks of the various insect pests attacking their crops. Practical demonstrations were given this year as to controlling cotton caterpillars, leaf-blister mite, and cotton stainers in the various parts of the Presidency.

From time to time meetings in connexion with agricultural matters were held in Virgin Gorda, Anegada, Jost van Dykes and Tortola. At these meetings the major part of the agenda comprised addresses by the Agricultural Officer on the cultivation and care of various crops, and also the control of insect pests, etc.

The attendance on the whole, was good, and in some instances, very lively and active discussions were maintained throughout the meetings.

His Honour the Commissioner continues to show his active interest in the welfare of the agricultural interest of the Presidency, and on many occasions he has presided over the meetings.

It must therefore be assumed that visits of this kind are capable of doing much good in stimulating the peasantry to improve their condition, and to gain useful information from the Agricultural Officers.

Extension of Interest in Agricultural Matters.

Canadian National Exhibition.

A small collection of exhibits, representing to some extent the produce and resources of the Presidency, was prepared at the Experiment Station, and forwarded to the West Indian Court, Canadian National Exhibition, Toronto, for exhibition at that show. This is the eighth consecutive year that the Presidency has been represented at the Canadian Shows. The exhibits comprised cotton, cacao, coffee, rum, lime juice, starches, sugar, and fancy work.

Berkshire and Tamworth Boars.

During the year one Tamworth and two Berkshire boars were imported from Barbados with the view of improving the local breed of hogs.

The boars were maintained in robust condition throughout the year, and it is known from reliable sources that some fifty or more young pigs have been borne to these boars by native sows.

At the end of the year arrangements were made for stationing the boars in different parts of the Presidency, and at present one has been located at Virgin Gorda, one at the west end of Tortola, and the other retained at the Experiment Station. In this way the breed will be established in a more uniform manner over the Presidency.

Details of Administration.

Expenditure.

The expenditure in connexion with the Agricultural Department was as follows:—

EXPENDITURE ON STATION, INCLUDING SALARIES.

	£	s.	d.
Personal emoluments	617	6	8
Repayment of purchase money and compensation to tenants on Experiment Station	88	19	9
Labour	215	0	0
Buildings	45	0	0
Machinery	25	0	0
Contingencies	47	12	8
Plants	8	12	5
Upkeep of stock	34	18	2
Agricultural experiments	21	14	3
Foreign exhibition	17	19	0
Coco-nut demonstration plot	26	0	0
Books for library	1	0	11
Fencing	5	0	0
Plant house	2	2	0
	£ 768	13	10

Of the above amount the sum of £8 0s. 11*d.* was paid from the balance of the Imperial grant-in-aid.

EXPENDITURE ON COMMERCIAL UNDERTAKINGS.

	£	s.	d.
Purchase of cotton	1,614	0	0
Purchase of limes	82	0	0
Ginning and baling of cotton	114	3	6
Extraction and shipping of lime juice	25	15	11
Labour and hire of stock	30	2	1
Supplies for the growth and manufacture of produce	22	16	3
Cotton seed for planting	26	4	1
	£1,915	1	10

The grand total expenditure incurred by the Agricultural Department on experimental work and commercial undertakings amounted to £2,683 15*s.* 8*d.*

RECEIPTS.

The receipts for the sale of cotton and lime juice cannot be presented accurately, owing to the fact that these products have not as yet been entirely sold, and therefore the figures, which are as follows, must be looked upon as an estimate :—

	£	s.	d.
Sale of cotton and cotton seed	2,191	0	0
„ lime juice	198	2	5
.. other products	94	12	10
	£2,483	15	3

RECEIPTS FROM SALE OF PLANTS, ETC.

The receipts under various heads amounted to £94 12*s.* 10*d.*, and were paid into the Treasury under the following sub-heads :—

	£	s.	d.
Sale of produce	82	18	5
Cotton seed for planting	7	3	3
Hire of carts	1	14	3
Rent of land	1	8	0
Sale of stores	1	8	11
Total ...	£94	12	10

This shows an increase of £2 3*s.* on the receipts for the previous year, and £11 4*s.* 5*d.* on that of the year 1911-12.

The receipts for sale of cotton, cotton seed, and lime juice are not included in the above statement, but are shown in separate receipts under the heading of commercial undertakings.

STAFF.

Mr. W. C. Fishlock, Curator of the Experiment Station, has been on leave of absence since August 1913. During the month of September the Station was in charge of the Foreman, Mr. E. Maduro

On October 2, Mr. C. A. Gomez, Assistant for Agricultural Experiments at the Botanical Station, Antigua, was appointed to act as Curator, which duties he has been carrying out up to the time of writing.

REPAIRS TO BUILDINGS.

No complete additions were made during the year under review. Some work in connexion with the improvement of the present stables for stock maintained at the Station, consisted in the erecting of concrete pillars for roofing the present pens. The roofing of these pens is deemed quite necessary, and it is hoped that the work will be accomplished in the near future.

CORRESPONDENCE.

The regular correspondence was carried on with the Imperial Commissioner of Agriculture, Barbados; the Superintendent of Agriculture, Antigua; the Commissioner of the Presidency, and various other botanical and commercial departments on matters of general agricultural interest to the island.

Letters to the number of 297 were received and registered during the period January 1, to December 31, 1913, and 232 despatched. In addition 125 publications were received, and 137 minute papers attended to during the same period. The total number of communications passing through the office was therefore 791.

Leaflets on cotton cultivation, and the control of insect pests were distributed from time to time among the peasantry.

Grateful acknowledgement and thanks are now expressed to contributors of the following publications :—

The Imperial Commissioner for the West Indies,	*Agricultural News.* *West Indian Bulletin.* Reports of Stations. Pamphlets.
The Director of Royal Gardens, Kew,	*Kew Bulletin.*
The Department of Agriculture, Jamaica,	Bulletin. Annual Report.
The Dutch Department of Agriculture,	Bulletin.
The Department of Agriculture, Trinidad,	Bulletin, Circulars, etc.
The Department of Agriculture, Mysore,	Annual Report.
The Director, New York Botanical Gardens,	*Journal of New York Botanical Gardens.*
The Experiment Station, Porto Rico,	Annual Report.
The Royal Botanical Society of London,	Journal.
The Jamaica Agricultural Society,	Journal.
The Dept : of Agriculture, Straits Settlement,	Bulletin.
The British Cotton Growing Association,	Pamphlets.
Gillespie Bros., New York,	Market Reports.
The A. I. Root Co.,	*Gleanings in Bee Culture*
Editor,	*Tropical Life.*
Macmillan & Co., London,	*Practical Work on Agriculture.*
Hawaii Botanical Station,	Circulars.

Catalogues from the Chattanooga Plow Co., Peter Henderson & Co. New York ; Thos. S. Ware & Co., and Merryweathers & Co.

OFFICIAL VISITS TO THE STATION.

Mr. H. A. Tempany, B. Sc., F.I.C.,F.C.S., Superintendent of Agriculture for the Leeward Islands, visited the Presidency during the month of November. Mr. Tempany spent a few days inspecting the Experiment Station and discussing in detail the experimental work in progress with the Acting Curator.

The Superintendent also made visits to the out-islands of the Presidency, and interviewed the more prominent cotton growers on the future advancement of that industry.

Mr. Tempany's report on this visit contains several suggestions for improving the Station, both in a decorative and economic manner, which were put in execution as far as was possible.

METEOROLOGICAL RETURNS.

The total rainfall for the year was 37·55 inches. This is 14·74 inches below the average for the last thirteen years, and is the lowest on record.

It will be also seen from the following returns that the supply of rain in the months of June, July, August and September was far too limited to promote agricultural activities, and naturally, all agricultural operations were retarded

Rain fell on 168 days throughout the year. On February 22 abnormal weather was experienced. Very high winds from the south-west prevailed ; heavy stratus and nimbus clouds enveloped the sky, and in a couple of hours 2 inches of rain fell, which was the maximum fall registered for one day throughout the year.

October was the wettest month, with 7·17 inches, and January the driest with only 49 parts. The returns showing the monthly precipitation, the average rainfall for the last thirteen years registered at the Experiment Station, and also at Belmont, Tortola, and Virgin Gorda, are given below :—

RAINFALL REGISTERED AT THE EXPERIMENT STATION.

Year 1913-14.		Average rainfall for each month for the last 13 years.	
Month.	Inches.	Month.	Inches.
April	3·33	April	1·98
May	5·51	May	4·41
June	3·86	June	4·28
July	2·37	July...	4·10
August	1·25	August	4·26
September	2·48	September	5·16
October	7·17	October	7·13
November	3·53	November	6·42
December	2·54	December	5·73
January	·49	January	3·11
February	3·91	February	3·18
March...	1·11	March	2·53
Total	37 55	Total	52·29

RAINFALL REGISTERED AT BELMONT, TORTOLA; AND AT VIRGIN GORDA.

Virgin Gorda.		Belmont, Tortola.	
Month.	Inches.	Month.	Inches.
1913.		1913	
April	3·39	April	·67
May	5·71	May	4·50
June	3·59	June	2·30
July	2·62	July	2·50
August	1·65	August	1·82
September	4·82	September	2·81
October	7·20	October	6·20
November	4·43	November	1·28
December	3·03	December	1·82
1914.		1914.	
January	1·19	January	·70
February	3·22	February	3·45
March	0·06	March	1·36
Total	40·92	Total	29·41
Average for last 7 years 50·90.		Average for last 7 years 37·40	

Publications on Sale

OF THE IMPERIAL DEPARTMENT OF AGRICULTURE

FOR THE WEST INDIES.

The WEST INDIAN BULLETIN'. A Quarterly Scientific Journal

Volume I :—Full reports of the Agricultural Conferences of 1899 and 1900.
Only a very limited number of copies of the parts of Volume I are available, and these cannot be sold separately. Volume I, complete in original paper covers as issued, post free, 5s.
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Volume XIII, No. 1. Containing Papers on COTTON AND AGRICULTURAL EDUCATION, prepared for the recent Agricultural Conference.
Volume XIII No. 2.—Containing Papers on SUGAR-CANE EXPERIMENTS IN BRITISH GUIANA, prepared for the recent Agricultural Conference.
Volume XIII, No. 3.—Containing Papers on RUBBER AND MISCELLANEOUS SUBJECTS, prepared for the recent Agricultural Conference.
Volume XIII, No. 4.—Containing papers on FORESTRY, SUGAR-CANE, COTTON, LIMES, etc.
Volume XIV, No. 1.—Containing papers on PEASANT AGRICULTURE IN THE WEST INDIES.
Volume XIV, No. 2.—Containing papers on CHEMISTRY, VETERINARY SCIENCE, etc.
Volume XIV, No. 3.—Containing papers on :—A Veterinary Survey of the Windward and Leeward Islands, by P. T. Saunders, M.R.C.V.S.; Epizootic Lymphangitis, by P. T. Saunders, M. R.C.V.S.; Agricultural Education and its Adaption to the Needs of the Student, by Dr. Francis Watts, C.M.G.; The Budding of Cacao, by Joseph Jones; The Analysis of Citrate of Lime and Concentrated Lime Juice; Specific Gravities of Cane Sugar Solutions at 30°C. (Douglas); Report on the Prevalence of some Pests and Diseases in the West Indies during 1913.

PAMPHLET SERIES.

The Pamphlets are written in a simple and popular manner, and the information contained in them is especially adapted to West Indian conditions. They contain, amongst other subjects, summaries of the results of the experiment work on sugar-cane and manures up to 1909-10, the full official reports of which have only a limited circulation. The number issued up to the present time is seventy-two. Those mentioned in the following list are still available; the rest are out of print :—

SUGAR INDUSTRY.

Seedling and other Canes at Barbados,
in 1900, No. 3, price 2*d.*; in 1901, No. 13, Price 4*d.*
in 1902, No. 19, price 4*d.* in 1903, No. 26, Price 4*d.*
in 1904, No. 32, price 4*d.*

Seedling Canes and Manurial Experiments at Barbados,
in 1903-5, No. 40, price 6*d.*; in 1904-6, No. 44, price 6*d.*
in 1905-7, No. 49, price 6*d.*; in 1906-8, No. 59, price 6*d.*
in 1907-9, No. 62, price 6*d.*; in 1908-10 No. 66, price 6*d.*

Seedling and other Canes in the Leeward Islands,
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Manurial Experiments with Sugar-cane in the Leeward Islands,
in 1902-3, No. 30, price 4*d.*; in 1903-4, No. 36, price 4*d.*
in 1904-5, No. 42, price 4*d.*; in 1905-6, No. 47, price 4*d.*
in 1906-7, No. 51, price 4*d.*; in 1907-8, No. 57, price 4*d.*
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SCALE INSECTS.

Scale Insects of the Lesser Antilles, Part I, No. 7, price 4*d.* Part II, No. 22, price 4*d*

GENERAL.

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(71) Insect Pests of the Lesser Antilles. Price 1*s.* 3*d.*
(72) Lime Cultivation in the West Indies. Price 9*d.*
(73) Root Borers and other Grubs in West Indian Soils. Price 6*d.*
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(75) Insect Pests of Sugar-cane in Antigua and St. Kitts. Price 6*d.*
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The above will be supplied post free for an additional charge of ½*d.* for the pamphlets marked 2*d.*; 1*d.* for those marked 4*d.*, and for Nos. 73 and 75; and 1½*d.* for Nos. 40, 41, 44, 45, 49, 59, 62, 63, 67, 69 and 74; 2*d.* for No. 72, and 4*d.* for No. 71.

AGRICULTURAL NEWS.

The Fortnightly Illustrated Review of the Imperial Department of Agriculture for the West Indies.

The first number of the **Agricultural News** was published on April 25, 1902. Subsequent numbers have regularly appeared, on every alternate Saturday, in time for the outgoing mails.

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